



Shodh Gyaan

Knowledge Through Research

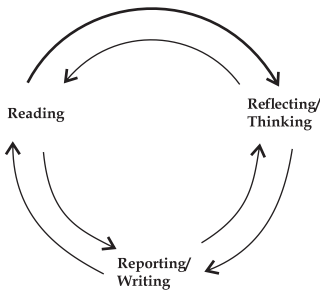




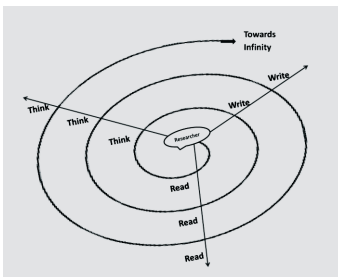
The Dean's Desk

Doctoral Students Need to Focus on Three 'R's of Research

After graduation, those who register for Ph.D/DBA/FPM degree feel that they are matured and that they know a lot about the field that they want to research in, little realizing that they are green horns in the field. They might have been outstanding in graduate course but do not realize that the world has changed by the time they have registered for doctoral course. In today's digitized and connected world, there is explosion of knowledge and all of us become irrelevant if we do not remain connected to our field of knowledge. The question, therefore, for all of us, especially doctoral students, arises as to how to connect and thereafter remain connected with one's field of research. I, generally, recommend to all pursuing doctoral degree to adhere to three 'R's during their doctoral journey - Reading, Reflecting and Reporting; in other words Reading, Thinking and Writing. The process is shown below schematically. There may, at times, be directional reversal which has been shown by thinner arrow.



Though reflecting and thinking are not same, they are somewhat similar. Likewise reporting is not same as writing; it is a wider term compared to writing; it being one form of reporting. My recommendation to doctoral students has always been to read, read....., think, think, thinkand write, write, write..... This is what I did during my doctoral work.



Even though you are doing as suggested above, it is not sufficient if you remain in the same orbit. In every cycle, you need to move up, moving to a new orbit of knowledge. The circle has to be given way to a spiral as depicted below; the spiral could be of any type, spiral of Archimedes, the logarithmic spiral, parabolic spiral, or the hyperbolic spiral.

While one of the models has been depicted above, the other models can be conceptualized by the students themselves. There could be a third model by mixing the two. Be it as it may, I have been asked umpteen number of times by the doctoral students as to how to derive the best out of Reading, Thinking and Writing.

The domain and methodology courses are delivered by faculty with precision but I, often, observe that the doctoral students are at bay when



the course work is over and they have to do the thesis work. The paragraphs below give them some tips in progressing well during their thesis work; in most of the cases, they are required to publish before the submission of thesis. No doubt, it requires field trips, data collection, analysis and interpretation, the work of Reading, Reflecting and Reporting should never stop. Given below are some tips for carrying out these activities.

Reading

Regular and repeated reading influences every aspect of our thinking. It builds a cognitive processing infrastructure that contributes to the ability to reason using words and numbers. (Stanovich, 2003). It is at the root of crystallized intelligence that represents a person's depth and breadth of general knowledge and vocabulary. Great persons' lives have been shaped through reading; Knowledge acquired through reading has even saved lives. Take the case of Thomas Edison, the great researcher, inventor and innovator. Formal schooling had eluded him but he became a voracious reader and remained so till his last breath. He benefited from reading books that were available in his father's home library. Not content with this, he visited Detroit public library where his frequency was highest. In his name there were 1,093 U.S. patents that included 1084 utility patents. In addition, 9 artistic design patents were registered in Edison's name. He created General Electric which remains at the helm of industrial world even today after more than a century. Newton, too, was very studious. It is said about him that either he was involved in business or "civilities of life" or was engrossed in a book with a pen in his hand to make notes. In fact, Rupert Baker, the Royal Society's library manager, calls Newton "a serial offender" as he used to make notes in the library book's page-corners. Newton's discovery

of gravity that has been projected as a fairy tale and considered to be a "bright idea" which came effortlessly is in reality, a discovery that took considerable time for reading and reflection. On the other hand, we have Abraham Maslow, a social scientist (psychologist), who writes about himself, "With my childhood, it's a wonder I'm not psychotic. I was the little Jewish boy in the non-Jewish neighbourhood . . . I was isolated and unhappy. I grew up in libraries and among books, without friends . . . My father wanted me to be a lawyer." After attending the law school for two weeks, he told his father that he does not want to be a lawyer and that he wanted to study rest of the things. Thereafter, reading, reflecting and reporting, he become what he is known for, and is considered in the category of Sigmund Freud, Erik Erikson and B. E. Skinner The doctoral students are mainly required to read research based books, peer reviewed articles and research reports. As far as books are concerned, I recommend to them to first find the right book related to the subject matter of research. Before deciding to read the book, they must know their query and the problem(s). One needs to go through the introduction thoroughly, interpret author's key words and come to terms with the author by grasping the author's propositions. Obviously, the students need to determine which of the problems of his concern has the author solved, and which he has not. They should not stop here; they need to make a critique of the book, the first rule is - do not begin criticism till you have completely read the book, reflected on it and thus, you are in a position to make interpretation. The issue is not about agreeing or disagreeing but about judgement which can be made only after you have understood properly the author's stand on the problems he has dealt in the book. Even if you disagree, never disagree disputatiously or contentiously. Make your judgement by recognizing the difference between knowledge and mere personal opinion.



You should make a note of where the author is uninformed, where misinformed, where illogical and where the author's analysis or account is incomplete. This helps in scholarly discussions.

Research paper

Research papers are read by the doctoral students throughout their course as well as during thesis work and its writing. Beyond courses and literature review, at times, I assign papers for reading and making a critique. Just like books, the students need to first scan all the articles that get thrown up during search through keywords. After going through abstracts, decide the relevant article that you need to read in full. When you read a research paper, your goal should be to understand the purpose of the paper, logical process that it has undergone and the scientific contribution that it is making. This requires going through the paper several times till you internalize it. Deep reading of several hours is needed to understand research papers.

Reading a research paper is a critical process. Unlike at undergraduate level, you should not presume that the authors are always right. It pays to be probing and suspicious. While reading the paper, go on asking questions that arises in your mind, especially about the purpose, the methodology and the conclusions drawn. If the authors attempt to solve a problem, question whether the authors are solving the right problem. If they are dealing with right problem, think whether they have considered various alternative solutions. Look at the limitations of the solution and whether the authors have noticed and clearly admitted these limitations. As building stands on the foundation, the research paper stands on existing theory and assumptions until and unless the authors are investigating a new field and working through grounded theory. Go through the assumptions a couple of times and decide whether the

assumptions the authors have made are reasonable. Given the assumptions, whether the logic of the paper is clear and justifiable or there is a flaw in the reasoning.

In empirical papers, whether quantitative or qualitative or mixed methods, the data constitute the building block. Consider whether the authors have gathered the right data to substantiate their argument and whether the sampling was right for collection of data. Further, one needs to ponder over whether the processing and interpretation of data are correct. Consider whether more data or other types of data were required to substantiate the argument. These are elements for reading a research paper critically; they help you tear apart the paper but what is also necessary is to build (synthesize) it up. You should do both analysis as well as synthesis; the later requires much more creativity. Creative reading is harder; it requires more positive thinking. Look for good ideas in the paper; consider other applications for these ideas as well as possible extensions that the paper did not deal with. Could there be possible improvements that might make important contribution? Can I start doing research based on this paper by taking the idea further or can I bring it to generalization level?

Never forget to make notes as you read the paper; remember Newton in this respect; he made notes even on the corners of the library book pages (I don't recommend it; always follow the rules of the library). For making notes, use whatever style suits you. During reading of the research paper, you must have had several questions or criticisms; in order that you do not forget them, write them down wherever it suits you. Remember to underline key points made in the paper; Make a note of both the data that is most important as well those that appear questionable. These efforts help even at the first time you read a paper; when you re-read the paper after a gap,



such habit of reading research papers pay big dividends. I recommend to my students to summarize the paper in a small paragraph after the first reading as it helps them in setting up mind when they read the paper next time.

Research papers are of many types; some offer new ideas, others take ideas further, yet another implement ideas. A good research paper attempts to give an answer to a specific question(s) known as research question. After critically reading a paper, you should be able to precisely describe the paper as you have read and understood the question the paper has raised and the answer authors have provided. In the first reading you had summarized the paper in a small paragraph; now read the paper again; deepen your initial paragraph through summarizing some more important sub-themes (three or four) of the main idea. A comparison of the paper with other similar papers and preparation of a comparative statement is of great help. This will help you gauge the scientific merit of the paper in the area as well as the contribution it is actually making. Reflect and judge whether the ideas are really novel, or have they appeared before.

Reflecting/Thinking

Reflecting Reflecting, though similar to thinking, is a deeper term. It is not about mind; in reflection your heart and soul speak. It allows your rational mind to rest and to go into your internal life and allows you to listen your heart. Sometimes, it is quite scary as what we hear from the heart is quite contrary to the rational thought of the mind. Our comprehension capability is limited whereas the messages from heart go far beyond. It requires going beyond thinking; you need to tap into the heart's messages from a higher cognitive level. While thinking is a part and parcel of human life; research requires deeper

thinking. Doctoral students after collecting the data and its analysis, require reflecting as well; qualitative researchers requiring more of it.

Thinking Thinking is the action of using one's mind to produce thoughts. In this activity, consideration of something is done through mind. Reason is the pillar of this process that helps figuring it out. It allows the engagement of the rational and ego-centric mind to make meaning of the issue. Here, the researcher fits his challenges into little boxes which has specific boundary and takes logical decisions though they may not be ideal but are optimum. Be it as it may, without thinking, you remain floating around in a state of indecision all the time. In some cases, we face a challenging situation where the variables are ever changing and cannot be fixed in a box; in that case obviously you have to think out of the box; go beyond logic in the domain of philosophy. No doubt, thinking takes you towards your research goal but not far enough to create new understandings, new theories.

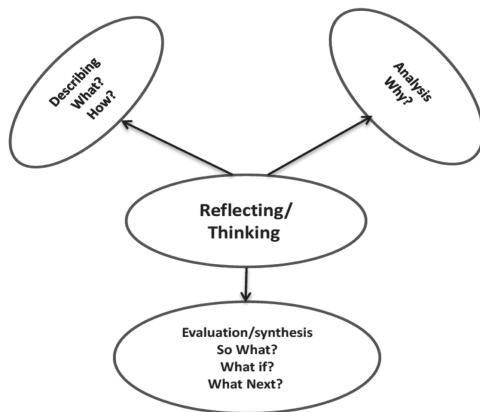
The analysis/synthesis connect with reflecting/ thinking is depicted below.

Your mind or thinking can take you to the logical path but never to the philosophy; it shows the right path for your life within certain constraints. It is the heart that is true to yourself; it provides experience and feeling and emboldens you to go beyond constraints. Doctoral students, who listened to their heart, have always been more successful in bringing new knowledge. They have remained more focussed in the domain and the design. I tell my students, "if you're looking for affirmation at a thinking level not at reflection level, you are tuned to the wrong channel of research." I advise them to spend some time quietly; go into your world within; listen and reflect.



Getting back to thinking, there are two types of thinking – Critical and Reflective. Many authors take Critical and Reflective thinking synonymously. Given below is the distinction between the two.

Critical thinking is connected to cognitive skills or strategies. Probability of a desirable outcome increases through critical thinking which is purposeful, reasoned and goal driven. It solves problems, formulates inferences, calculates likelihoods, and makes decisions as it makes the researcher use skills that are relevant and effective. It makes you connect with the context and the task. Critical thinking and directed thinking are considered synonymous by many as both focus on a desired outcome. (Halpern, 1996). This is more relevant for a research with positivist approach.



Reflective thinking, on the other hand, refers to the processes of making judgments by analysing things about what has happened. It is a part of the thinking process that is active and persistent. Reflective thinking makes careful consideration of the grounds that support the inner thoughts to create knowledge. It helps in development of a belief or supposed form of knowledge that leads to conclusions (Dewey, 1933). Students are well advised to develop the habit of reflective

thinking and attend seminars/workshops on this topic. This makes them assess what they know; what they need to know and how to bridge that gap. Reflective thinking helps all researchers, more so with interpretivist ontology. Reporting/Writing Reporting is a wider term which includes writing. Whether you are reading and reflecting for writing your thesis or a scholarly article, you need to report your research to the academic community by writing the same. The question that has been asked by the doctoral students, "Well Professor, you have asked me to read, I did that, you asked me to reflect/think, I did that but after all this when I send you the draft of my paper you reject it or ask me to rewrite, why?" To answer this question, I always tell them write again and again till you are able to get rid of all shortcomings and ambiguities. I cite them that even Einstein's paper was rejected by 'Physical Review' in which he had claimed that gravitational waves couldn't exist. The reviewer (Howard Percy Robertson) showed that Einstein made a mistake in his calculations and rejected the paper. Here, there was an error of substance but besides error of substance like those of design, methods and calculations, many a times, there may be non-significant errors like grammatical, typographical and the narrative flow of the paper/thesis. In order to eliminate such errors, students will do well to write again and again all the chapters of the paper/thesis; thereafter comes the proper abstract. In this regard I would like to advise the doctoral students in the following paragraphs. In any research paper or the thesis, an abstract, with which the reader interacts initially, is provided. It provides the glimpse of each major aspect of the paper which enables the readers to decide whether the paper should be in inclusion or exclusion category and accordingly; that in turn makes you decide whether to read the full paper. Enough key information like summary results, observations and academic contribution,



therefore, must be included to increase the chances of the paper to be read and cited. As the abstract is written after the paper is ready, a researcher, who reads the paper during literature survey, should get the whole story about your research. All papers start with introduction which includes the background and the purpose of the paper. The readers, through introduction chapter, are led to the specific topic of inquiry. The introduction outlines the context and establishes the scope besides stating the relevance and significance of the research that the author is undertaking. It tells the current understanding (not in detail as required in literature review) and the objective of the work which may be presented in the form of the research problem and possible outcomes of the study but it is not necessary in case of papers working on grounded theory. It should also outline the remaining structure and organization of the paper. The literature review should provide not only the summary of the important information of the source on the subject but it should do the synthesis and re-organization of the information that has been collected from previous studies. You need to group the literature theme wise. The analysis of a literature review is required to give a new interpretation of old material. At times, the authors combine new with old interpretations giving a trail of the intellectual contributions in the field. In doing so, they include major debates and evaluate the sources. The reader is, thus, able to find the most relevant research in the field. The concluding paragraphs must identify where gaps in research exist.

The design and methodology section should describe actions to be taken to investigate the research gaps found from the literature review. Based on this gap, research questions are formed. These questions form the basis for deciding the research design, methodology, methods, tools &

techniques. While selecting tools & techniques, you should be clear that they are to serve your research. Never hide behind tools & techniques to justify your research outcome. Tools & Techniques should be appropriate for your research question; they need to help you analyse the information collected during investigation. In this regard, remember Maslow's words, "If the only tool you have is hammer, you tend to see every problem as nail." This section should be such that no doubts are left in the minds of the readers about validity and reliability of the research work. Questions like how sample was drawn, how data was collected or generated and how the data was processed and analysed are answered by this chapter. As a researcher, you should be direct and precise while writing this chapter which should be written in the past tense. If a new method has been developed or an innovation has been done in the use of an existing method, the methodology should be written in greater detail. This helps other researchers to adopt this new/innovative method. Findings/ Results section of the research calls for reporting the finding of the research in a logical sequence. In case of positivist approach, it should be stated without bias or interpretation while in social constructionist approach, you are allowed your own interpretation. To present results more effectively, the authors must clearly distinguish between raw data or other content and relevant information. Only relevant information should normally be included in a research paper whereas raw data or other content should form part of appendix. To connect between introduction and results, it is always a good strategy to re-read the introduction chapter after writing the results. This ensures that the context is understood by the reader and he looks at the paper with right lenses. The discussion chapter should connect with the previous chapters like literature review, research questions or hypotheses and the results. However, it should be clearly understood that it



is not rearranging the introduction or the literature review or the findings. The purpose of this chapter is to explain how the research has progressed from the understanding of the research problem from the point where previous researchers had left. Discussion provides you an opportunity to bring forth the points of agreement and disagreement with previous findings. You need to explain why you agree or disagree. If any new understanding or insights has come from your research, the same needs to be explained. This chapter allows you to interpret and describe the importance of research findings and provides an opportunity to demonstrate your capability to think critically and reflect on the issue. Finally, you have to do a logical synthesis of the findings and formulate a deeper understanding of the problem undertaken for investigation.

When the findings of the research are brought forward before the peers, the general question asked is, "So What?" It is here that the conclusion chapter gives an opportunity to answer this question. You need to position the study within the context of the newness that your research has

brought in this chapter. You need to clearly bring forward the point that your research is not me, too; it is obviously beyond past researches bringing new knowledge or falsifying old knowledge on the topic. It should be the synthesis of key points, limitations of your research and suggestions for future research. The conclusion should not be too long; in case of a research paper, a paragraph may be good enough while in case of thesis two to four paragraphs may be required.

Reference is an essential part for an article or a thesis though not considered as a part of article or thesis. It is provided at the end of the publication; it includes all published or unpublished source that was consulted and from which information was derived for finding the research gap. The way in which you need to document your sources depends on the manual provided by your University/Institute which may include APA, MLA, Chicago, etc. APA style of referencing is the most widely used; I advise my doctoral students to use this style of referencing.

Dr. A Sahay